ORIGINAL RESEARCH ARTICLE

Optimising the effectiveness of the see and treat program for cervical intracellular neoplasia among HIV-positive women, Addis Ababa Ethiopia

DOI: 10.29063/ajrh2025/v29i4.2

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Abstract

Cervical intraepithelial neoplasia is a precancerous lesion that can rapidly progress to cervical cancer in people living with HIV if not promptly treated. This cross-sectional study included 108 women who returned for re-evaluation after participating in the see-and-treat program at regional hospitals in Addis Ababa. Chi-square tests and odds ratios with 95% confidence intervals were calculated. Findings revealed an effectiveness rate of 73.2%, while 26.8% of women required further treatment. Multivariate analysis showed statistically significant associations for the following factors: age group (adjusted OR [AOR] = 0.03, 95% CI: 0.002–0.36, p = 0.03), ever use of family planning (AOR = 0.26, 95% CI: 0.07–0.96, p = 0.04), number of sexual partners (AOR = 0.26, 95% CI: 0.07–0.96, p = 0.04), and CIN stage (AOR = 0.19, 95% CI: 0.04–0.95, p = 0.04). The findings highlight a lack of effectiveness for a substantial number of women, underscoring the need for further research and potential revisions to the see and treat program for HIV positive women. *(Afr J Reprod Health 2025; 29 [4]: 16-27).*

Keywords: HIV positive women; cervical intracellular neoplasia; effectiveness; evaluation; see and treat program

Résumé

La néoplasie intraépithéliale cervicale est une lésion précancéreuse qui peut rapidement évoluer vers un cancer du col de l'utérus chez les personnes vivant avec le VIH si elle n'est pas traitée rapidement. Cette étude transversale a inclus 108 femmes réévaluées après avoir participé au programme « voir et traiter » dans les hôpitaux régionaux d'Addis-Abeba. Des tests du khi carré et des rapports de cotes avec des intervalles de confiance à 95 % ont été calculés. Les résultats ont révélé un taux d'efficacité de 73,2 %, tandis que 26,8 % des femmes ont nécessité un traitement complémentaire. L'analyse multivariée a montré des associations statistiquement significatives pour les facteurs suivants : tranche d'âge (RC ajusté [RCA] = 0,03, IC à 95 % : 0,002–0,36, p = 0,03), recours à la planification familiale (RCA = 0,26, IC à 95 % : 0,07–0,96, p = 0,04), nombre de partenaires sexuels (RCA = 0,26, IC à 95 % : 0,07–0,96, p = 0,04) et stade de la CIN (RCA = 0,19, IC à 95 % : 0,04–0,95, p = 0,04). Ces résultats soulignent un manque d'efficacité pour un nombre important de femmes, soulignant la nécessité de recherches supplémentaires et d'éventuelles révisions du programme « voir et traiter » pour les femmes séropositives. *(Afr J Reprod Health 2025; 29 [4]: 16-27).*

Mots-clés: femmes séropositives, néoplasie intracellulaire cervicale, efficacité, évaluation, programme « voir et traiter »

Introduction

Among women living with HIV (WLHIV), cervical cancer is a major cause of cancer-related morbidity and mortality. According to studies, women with human immunodeficiency virus (HIV) are much more likely to get cervical cancer because HIV-induced immunosuppression makes it possible for high-risk human papillomavirus (HPV) infections, which are the main cause of cervical cancer, to persist.[1,2] cervical intraepithelial neoplasia is a pre-invasive squamous lesion for cervical cancer and is classified into three stages: CIN1, CIN2, and CIN3. Cervical intraepithelial neoplastic 2 (CIN2) or CIN3 (referred to as CIN2+) can proceed to cervical cancer if left untreated.[3]

Infection with the human immunodeficiency virus causes the illness to develop rapidly and has

unfavourable clinical results.[4] According to a systematic review article on the epidemiology of precancerous cervical lesions in HIV-positive women in Sub-Saharan Africa, one in every four HIV-infected women has a precancerous cervical lesion.[5] The World Health Organisation (WHO) stresses early detection as a cornerstone of cancer control in low and middle-income countries, along with accurate diagnosis, access to appropriate cancer treatments, and effective cancer prevention and treatment.[6] For low and middle-income nations, including Ethiopia, see-and-treat programs introduced for cervical intracellular neoplasia screening and treatment irrespective of the HIV status of the women.[7]

The see-and-treat program included screening via visual inspection with acetic acid (VIA) of the vagina and cervix, along with treatment for positive results, which encompasses Loop Electrosurgical Excision Procedure (LEEP), cryotherapy, and thermal ablation.[8] The effectiveness of the see-and-treat intervention after cryotherapy, thermal ablation or LEEP was measured with visual inspection with acetic acid-positive women advised to return 1 year after and recently revised from Ethiopian see-and-treat guideline to six months of treatment for follow-up screening.[9,10] Cure proportions in HIV-positive patients are not specifically demonstrated due to limited studies.[11] Nevertheless, certain studies have verified that effectively treating HIV-positive women who have received cryotherapy and thermal ablation is challenging.[12] Likewise, research conducted in low and middle-income countries reveals that between 23 and 55 per cent of screened HIV-positive women had CIN2+ precancerous lesions. Recurrence of cervical intraepithelial neoplasia after cryotherapy, thermal ablation, or LEEP was common in HIV-positive women.[13]

In Ethiopia, the see and treat cervical cancer intervention program was implemented in 2009 as part of a comprehensive HIV treatment package at 14 institutions.[7] This high prevalence of HIV among women puts Ethiopian women at greater risk of pre-invasive cancer lesions and potentially invasive cervical cancer, making this a major public health problem in Ethiopia.[14,15] Despite the implementation of the see and treat program, cervical cancer continues to be the leading cause of cancer-related mortality among women.[7] However, further studies and evaluation with long-term follow-up are needed to confirm these results and to generate more evidence on the effectiveness of the procedures for women treated for cervical precancerous lesions.[16,17] so, this study evaluates the effectiveness of the see-and-treat program for CIN among HIV-positive women who enrolled in the antiretroviral therapy programAmong women living with HIV (WLHIV), cervical cancer is a major cause of cancer-related morbidity and mortality. According to studies, women with human immunodeficiency virus (HIV) are much more likely to get cervical cancer because HIV-induced immunosuppression makes it possible for high-risk human papillomavirus (HPV) infections, which are the main cause of cervical cancer, to persist.[1,2] cervical intraepithelial neoplasia is a pre-invasive squamous lesion for cervical cancer and is classified into three stages: CIN1, CIN2, and CIN3. Cervical intraepithelial neoplastic 2 (CIN2) or CIN3 (referred to as CIN2+) can proceed to cervical cancer if left untreated.[3]

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Methods

Study design

This study employed a hospital-based cross-sectional design to evaluate the effectiveness of the see-and-treat program for cervical intraepithelial neoplasia (CIN) among HIV-positive women. The hospital-based cross-sectional design was chosen to leverage the practical advantages of accessibility, resource efficiency, and data quality. It aligns well with the specific requirements of evaluating the see and treat program within the context of existing healthcare delivery settings in Addis Ababa, ensuring that the study findings are both relevant and actionable for improving cervical cancer screening and treatment among HIV-positive women living in similar low-resource settings. From November 1st, 2022, to June 30th, 2023, the study was conducted in the outpatient cervical cancer screening departments of five selected public hospitals in Addis Ababa, Ethiopia.

Study setting

This study was conducted in five regional hospitals in Addis Ababa, selected for their ability to implement see-and-treat interventions. These hospitals were chosen to represent a wide range of facilities that provide cervical cancer screening and treatment services to HIV-positive women in the region. These hospitals were selected based on their existing provision of the See and Treat program. Five of the six hospitals under the Addis Ababa Regional Health Bureau currently offer this program, while the sixth is yet to launch it.

Population, sampling and sample size

The study population consisted of HIV-positive women who visited the selected hospitals for cervical cancer screening and were eligible for the see and treat intervention. Eligibility criteria included having HIV-positive status confirmed by medical records and attendance at one of the selected hospitals for re-evaluation. Eligibility for the see and treat intervention is based on initial screening results indicating the presence of precancerous lesions and treatment with see-and-treat interventions.

The sampling technique employed in this study is consecutive sampling, a non-probability sampling method. Consecutive sampling involves identifying all qualified participants who satisfy the inclusion criteria and visiting the designated hospitals throughout the study until the required sample size is reached. By including every eligible individual who visited the hospitals during the research duration, consecutive sampling minimises selection bias. This helps obtain a sample representative of the population seeking care at these facilities.

In this study, a double proportion design with a 1:2 ratio was employed, where for every participant in the acceptable group, two participants from the non-acceptable group of the see and treat program were included. This design allows for a more robust comparison between the two groups, ensuring sufficient statistical power to detect variables associated with service uptake. Acceptable group, consisting of women living with HIV, is the

focal point of this paper as the primary aim is to evaluate the effectiveness of the see and treat program. By focusing on this group, this paper provides the effectiveness (cure rate) of the interventions and factors associated with effectiveness among women living with HIV, which is critical for hampering the progression of the disease. Major variables considered in the sample size calculation were knowledge of cervical cancer, income, and exposure to mass media. During calculation, we assumed the percentage of the proportion of cervical cancer screening acceptance by each selected major variable as taken from studies.[18,19] For a significance level of 0.05 ($\alpha = 0.05$) and a desired power of 80%, From all alternatives, those with good knowledge of cervical cancer (12.5%) and those who have poor knowledge (6.0%) give the maximum sample size of 322. As scientific evidence suggests, the acceptability of see and treat intervention is low.[20,21] so, the researcher used a 1:2 ratio for the acceptable and non-acceptable groups of participants. It was determined that a sample size of 108 women in an acceptable group was required. Table 1 shows the number of HIV Positive women who expected to attend one of the hospitals for treatment intervention in 2014 (in the Gregorian calendar September 11, 2021, to July 7, 2022) Ethiopian fiscal year (Total of 2186 HIV-positive women) divided by the total number of patients who attend the five hospitals equals the proportion to the population size.

Data collection

Data collected through questionnaires were entered into the Research Electronic Data Capture (REDCap) system. Inconsistent or missing data were identified and corrected through follow-up with data collectors or review of medical records. All data were securely stored in the REDCap system, with access restricted to authorised personnel only. Hard copies of questionnaires and other documents were stored in locked cabinets to ensure confidentiality.

Data was collected through a self-administered questionnaire to gather data on demographic information, HIV-related clinical history, and details of the treatment intervention, including treatment outcomes and complications. The researcher collected the following demographic variables: age, marital status, education level, and employment status. Clinical variables such as duration of HIV infection, use of antiretroviral therapy (ART), CD4 count, and history of previous cervical cancer screenings. Outcome variables such as resolution of CIN, progression to cervical cancer, adherence to follow-up visits, and occurrence of treatment-related complications. The researcher made sure that every pertinent topic was discussed. Research participants freely answered every question, and any confusing questions were clarified whenever necessary. Before their enrolment in the trial, each participant gave their informed consent. This included assuring their voluntary involvement and outlining the purpose of the study, procedures, potential risks and benefits.

Data analysis

The data analysis was conducted using SPSS version 27. Descriptive statistics, inferential statistics, and both crude and adjusted odds ratios were computed to assess associations and control for confounding variables. Variables with a significance level of $p < 0.2$ were selected for multiple logistic regression models. A significance threshold of $p < 0.05$ was applied to determine statistically significant results. All data from the questionnaire were coded using a code book and entered into SPSS version 27.0. The researcher utilised codes instead of respondents' names and checked for missing or incorrect values through frequency analysis. Descriptive statistics such as mean, mode, median, and standard deviation were calculated. The analysis results were presented in tables and charts for clarity and interpretation.

Validity and reliability

In assessing the validity of the data collection instrument, the study focused on both face validity and content validity. Face validity was ensured by presenting to the supervisor seeking input from the supervisors and experts in the field, aligning the questions with the study objectives. Content validity was addressed through a thorough literature review and consultation with supervisors and experts to ensure alignment with the construct domain before finalising the questionnaire. The instrument's reliability was established using the test-retest method, where the same questionnaire was administered to the same set of respondents on two separate occasions. A sample size of 10 respondents was selected, and the Cronbach Alpha correlation

technique was employed to compare the responses. The strong positive relationship with a correlation coefficient of 0.9 indicated the high reliability of the instrument, ensuring consistency and reproducibility of the data collected.

Ethical consideration

Approval: The Ethical Review Committee of the University of South Africa (UNISA) and Armauer Hansen Research Institute and All Africa Leprosy, Tuberculosis, and Rehabilitation Training Centre (AHRI-ALERT) ethical review board the study protocol. The Addis Ababa Regional Health Bureau and the hospitals provided permission letters. Before data collection, participants gave their written informed consent. They received guarantees that their data would be kept private and that they could leave the study without impacting their medical treatment. All data were anonymised to protect participant identities. Personal identifiers were removed, and data were coded to ensure privacy.

Results

Socio-demographic characteristics

A total of 108 women participated in the study, achieving a response rate of 100%. The mean age of the women was 38.0 years ± 5.6. More than half (53.6%) of the participants were between 30 and 39 years old. As shown in Table 2, the majority of participants were within the age range of 30-44, constituting 78.70% of the total sample. Those aged 19-29 accounted for 6.48%, while those aged 45 and above comprised 14.81% of the participants.

Regarding education, 12.1% had never attended school, 29.6% had completed primary education, 36.1% had secondary education, and 12.9% held a diploma. The occupations of their partners varied, with 5.7% being merchants, 12.9% daily labourers, 52.8% government or private employees, 25.7% self-employed individuals, and 2.9% unable to work. The participants' Body Mass Index (BMI) categories were as follows: 5.6% were underweight, 50.9% had normal weight, 33.3% were overweight, and 10.2% were classified as obese. In terms of income, 87.9% had an income of ≤10,889, while 12.1% had an income of ≥10,900.

Lifestyle, reproductive and sexual health of the study participants

Regarding contraceptive utilization, pills (30.0%) and injectable (25.0%) were the most common methods, with condom use reported by 18.7% of participants. The majority reported sometimes (33.7%) or never using condoms (35.6%) during sexual intercourse. The study population exhibited a high prevalence of gravidity (92.6%), with a significant portion having their first childbirth before age 22 (58.1%).

History of abortion was reported by 44.4% of participants, and induced abortion was more common (58.3%) than spontaneous abortion (41.7%). The majority had menarche at ages 13-15 (50.0%) and initiated sexual activity before the age of 19 (65.7%). Lifetime sexual partners were predominantly two or above (75.0%). Family history of cervical cancer was relatively low (7.6%), and a

Table 1: Sample size distribution according to the number of HIV-positive women's see-and-treat services provided

S.N	Study area (hospitals)	2014 EFY see-and-treat intervention for HIV-positive women	Rate	Sample Size	Acceptable HIV +VE women**
(A)	(B)	(C)*	(D)	(E) = 322*D	(G) = (E/3)
1	Hospital 1	753	34%	109	36
2	Hospital 2	595	27%	87	29
3	Hospital 3	267	16%	52	18
4	Hospital 4	347	12%	39	13
5	Hospital 5	224	11%	35	12
	Total	2186			108

Note * HIV positive women undergo see and treat program offered in 2014E.C

Table 2: Distribution of study participants by their socio-demographic characteristics

Variables	n	%
Marital status		
Single	16	14.8
Married	46	42.6
Divorced	26	24.1
Widowed	20	18.5
Age Category		
19-29	7	6.5
30-44	85	78.7
>=45	16	14.8
Educational status		
Never go to school	13	12.1
Primary(1-8)	32	29.6
Secondary (9-12)	39	36.1
Diploma	14	12.9
Degree and above	10	9.3
Educational status of partner *		
Never go to school	7	10
Primary(1-8)	12	17.1
Secondary (9-12)	25	35.7
Diploma	9	12.9
Degree and above	17	24.3
Occupational status of the participant		
Housewife	28	25.9
Merchant	3	2.8
Daily labourer	14	12.9
Gov't/Private employee	42	38.9
Self employed	21	20.8
Occupational status of partner *		
Merchant	4	5.7
Daily labourer	9	12.9
Gov't/Private employee	37	52.8
Self employed	18	25.7
Unable to work	2	2.9
Duration of HIV diagnosis		
<10 yrs.	47	43.5
10-19yrs	59	54.6
≥ 20yrs	2	1.9
Duration of ART treatment		
< 10yrs	53	49.1
≥ 10yrs	55	50.9
Baseline CD4 count		
< 500	81	90
500-1500	9	10
Current CD4 count		
< 500	44	54.3
500-1500	37	45.7
Current Viral load		
Not detectable	82	75.9
Acceptable level (<200 copies/ml)	3	2.8
unacceptable level(>200copies/ml)	23	21.3
Baseline WHO HIV staging		
Clinical stage 1	68	62.9
Clinical stage 2	20	18.5
Clinical stage 3	12	11.1
Clinical stage 4	8	7.4
Body mass index		
Under weight	6	5.6
Normal	55	50.9
Over weight	36	33.3
Obesity	11	10.2
Income level		
≤ 10889	95	87.9
≥ 10900	13	12.1

Note. *Total participants n=108*. Participants were different based on the variables. * n=70 participants partner, **n=89 Baseline CD4 count and *** n=81 current CD4 count.

quarter of participants reported a diagnosis of sexually transmitted infections (STIs). Other lifestyle factors, such as khat chewing (19.8%), smoking (7.4%), and alcohol consumption (43.3%), were also explored.

Effectiveness of the see and treat intervention

The descriptive analysis showed that 73.1% of participants achieved a cure from the intervention, while 26.9% did not. A Chi-square test was used to assess the possible association between the effectiveness of interventions and the listed variables Table 3.

The Chi-square analysis indicating a substantial association between age categories with ($\chi 2 = 10.5$, df = 2, p = 0.005), ever used of family planning at ($\chi^2 = 4.1$, df = 1, p = 0.04), Number of sexual partners at ($\chi^2 = 4.5$, df = 1, p = 0.01). Treatment methods employed (Cryotherapy, thermal ablation, LEEP) with ($\chi^2 = 7.6$, df = 2, p = 0.02), patient satisfaction with the intervention ($\chi^2 = 4.7$, df = 1, p = 0.02) and Stage of cervical intracellular neoplasia at ($\chi^2 = 6.5$, df = 1, p = 0.01).

Inferential analysis using bivariate and multivariate methods, presented in Table 4, revealed noteworthy findings on the adjusted odds ratios for the cure rate associated with the intervention across various age groups and compared to the reference group (aged 19-29), individuals aged ≥45 exhibited a remarkable 99.9% effectiveness in responding to the intervention, indicated by an AOR of 0.03 (95% CI: 0.002-0.36, p = 0.03).

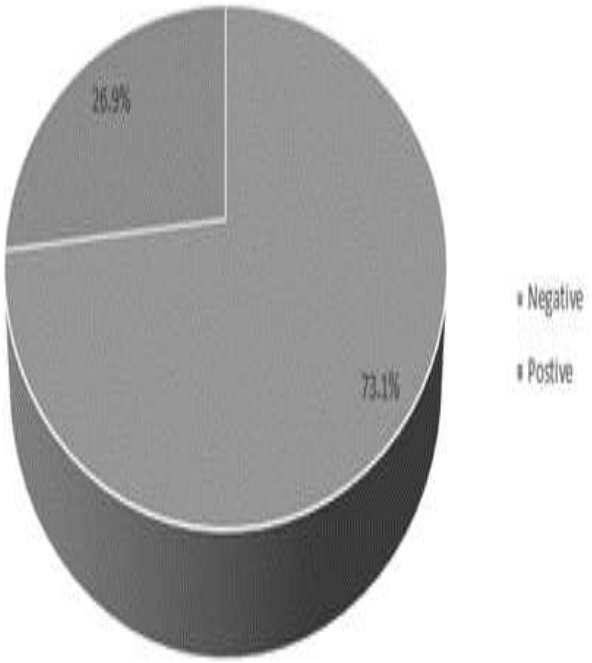

Figure 1: VIA re- evaluation result after intervention N=108

Multivariate analysis showed that participants who had never used family planning had a substantially lower likelihood of achieving a cure than those who had used family planning (AOR=0.26; 95% CI: 0.07-0.96, p = 0.04). Regarding the number of sexual partners, the adjusted odds ratio (AOR) of 0.26 suggests that individuals with one sexual partner had approximately 74% lower odds of not achieving a cure, as the AOR is less than 1.

The 95% Confidence Interval (CI) of 0.07-0.96 indicates the range within which this effect is estimated, and the p-value of 0.04 confirms that this difference in cure rates is statistically significant. The analysis of cure rates based on the treated CIN stage also revealed significant findings. Individuals with CIN II had an adjusted odds ratio (AOR) of 0.19, indicating they had approximately 81% lower odds of achieving a cure compared to individuals with CIN I. The 95% Confidence Interval (CI) of 0.04-0.95 suggests the range within which this effect is estimated. The p-value of 0.04 indicates that the difference in cure rates between CIN I and CIN II is statistically significant.

Discussion

Lifestyle, reproductive and sexual health in association with effectiveness of the see and treat intervention

The Chi-square analysis revealed a significant association between prior use of family planning (χ^2 = 4.1, df = 1, p = 0.04) and the number of sexual partners (χ^2 = 4.5, df = 1, p = 0.01). These findings highlight the influence of reproductive health practices and lifestyle factors on health-seeking behaviours and the effectiveness of see-and-treat interventions among women in Ethiopia. Various lifestyle factors, reproductive health practices, and health literacy influence the effectiveness of see-and-treat interventions for women in Ethiopia. Women's empowerment and decision-making autonomy are crucial in seeking healthcare services, including cervical cancer screening and family planning.[22,23] In addition, the chi-square showed a significant association between Satisfied with service and the program's effectiveness. Similarly, studies showed high satisfaction rates are often associated with better health-seeking behaviour, adherence to treatment plans, and overall program success.[24] Our study found no significant association with educational level or body mass index; however, other research findings have indicated otherwise. Empowering women through education and community engagement can enhance their understanding of health rights and services, increasing their participation in health interventions.[25] Moreover, nutritional education can improve dietary practices among pregnant women, enhancing their overall health and the effectiveness of reproductive health services.[25,26]

Effectiveness of the see and treat intervention of the participants

This finding underscores the effectiveness of the intervention in successfully treating a substantial portion of participants (73.1%) while also highlighting the need for continued efforts to improve outcomes for those who did not experience a cure (26.9%), potentially needing to revise the intervention for HIV-positive women.

Table 3: Exploring the effectiveness of interventions and variables

Variables	Chi-square	df	P-value
Age	10.5	2	0.005*
Marital status	1.1	3	0.77
Educational level	3.1	4	0.54
Income level	0.1	1	0.73
Ever use family planning	4.1	1	0.04*
Condom Use	4.1	2	0.12
Number of sexual partners	4.5	1	0.03*
Abstain after the procedure for 4 weeks	2	1	0.16
Type of procedure	7.6	2	0.02*
History of HIV diagnosis	3.7	1	0.05
Baseline CD4 count	79.4	3	0.28
Current CD4 count	2.2	1	0.13
Recent viral load	6.4	5	0.27
Satisfied with service	4.7	1	0.02*
Treated CIN stage	6.5	2	0.01*

*Statistically significant which is P-value <0.05

Table 4: Bivariate and multivariate analysis for cure rate with various dependent variables

Variable	COR	CI at 95%	P-value	AOR	CI at 95%	P-value
Age category						
19-29	Reference					
30-44	0.15	(0.03,0.82)	0.02*	0.11	(0.01,1.25)	0.08
≥45	0.03	(0.002,0.36)	0.006**	0.03	(0.002,0.75)	0.03*
Marital status						
Single	Reference			NA		
Married	0.96	(0.28,3.29)	0.95			
Divorced	0.66	(0.16,2.67)	0.56			
Widowed	0.55	(0.12,2.52)	0.44			
Educational status						
Never go to school	Reference			NA		
Primary (1-8)	0.45	(0.11,1.81)	0.26			
Secondary (9-12)	0.71	(0.19,2.63)	0.61			
Diploma or technical/vocational	0.64	(0.13,3.20)	0.59			
Higher (degree and above)	0.18	(0.02,1.86)	0.15			
Income level						
≤ 10889	Reference			NA		
≥ 10900	1.24	(0.35,4.40)	0.73			
Ever used family planning						
Yes	Reference					
No	0.36	(0.13,0.99)	0.04*	0.26	(0.07,0.96)	0.04*
Condom use						
Always	Reference			NA		
Sometimes	0.57	(0.19,1.63)	0.29			
Never use	0.32	(0.10,0.99)	0.04*			
Type of procedure						
Cryotherapy	1.79	(0.71,4.52)	0.22	NA		
Thermal ablation	0.56	(0.22,1.41)	0.22			
LEEP	Reference					
Number of sexual partners						

1	0.26	(0.07,0.96)	0.04*	0.26	(0.07,0.96)	0.04*
>=2	Reference					
Abstain after procedure for 4 weeks						
yes	Reference			NA		
No	2.17	(0.73,6.45)	0.16			
History of HIV diagnosis						
<10	Reference			NA		
10-24	0.43	(0.18,1.03)	0.06			
Baseline of CD4 count						
<500	Reference			NA		
500-1500	0.41	(0.05,3.47)	0.41			
Current CD4 count						
<500	Reference			NA		
500-1500	2.24	(0.77,6.53)	0.14			
Current Viral load						
Acceptable level	Reference			NA		
Unacceptable level	0.14	(0.01,1.86)	0.14			
Not detectable	0.18	(0.02,2.12)	0.18			
Satisfied with service						
No	Reference			NA		
Yes	0.11	(0.01,1.14)	0.07			
Treated CIN stage						
CIN I	Reference					
CIN II	0.18	(0.04,0.95)	0.04*	0.19	(0.04,0.95)	0.04*

Note. * P< 0.05 statistically significant and **P< 0.01 highly statistically significant

Similarly, researchers examined the cure and success of the see-and-treat interventions evaluation and revealed that from 93 participants, 39 (41.9%) individuals were diagnosed with CIN 1 and 54 (58.1%) with CIN 2 or 3. Specifically, 31 (79.5%) of those in the CIN 1 group exhibited VIA negative one year after undergoing cold coagulation (cryotherapy) treatment[27].

Other studies from Cameroon also showed that the cure rate for CIN at 12 months was 70.6%, [28] and a community-based clinic from India on post-treatment follow-up after one year from see-and-treat intervention revealed a 74.1% success rate. [29] This 26.8% who did not experience a cure represents a subset of the population for whom further attention and tailored strategies are necessary. Consequently, these results underscore the importance of sustained efforts in improving the effectiveness and reach of cervical cancer screening programs, particularly in the context of HIV Positive women, because the treatment failure for CIN is confirmed in several studies.[13,30,31] Similarly, studies explore the retreatment precancerous lesion stage as a bottleneck for treatment success.[32–34]This research also confirmed that the effectiveness of the interventions in achieving a cure varies with the stage of CIN. Specifically, individuals with CIN II had an 81% lower chance of achieving a cure compared to those with CIN I. It suggests that the see-and-treat intervention is more effective in treating CIN I than CIN II (AOR=0.26, 95% CI: 0.07-0.96, p = 0.04). CIN1 can be (low grade), CIN2 (moderate grade), CIN3/CIS (high grade), and ultimately.[2] In this study, an intriguing discovery was the correlation between the treatment method used for precancerous lesions and its effectiveness. The results indicated that patients who underwent LEEP achieved a flawless cure rate of 100.0%, whereas thermal ablation and Cryotherapy showed lower cure rates of 76.3% and 64.3%, respectively. These findings emphasise the substantial impact of the treatment method on cure rates, suggesting the efficacy of LEEP in achieving complete recovery and highlighting its clinical significance in cervical intracellular neoplasia management. The result of the research, strongly supported by literature, indicated that women with HIV who screen positive for cervical precancerous lesion, LEEP, are more effective at preventing recurrent cervical neoplasia and failure rate than other ablative procedures.[34–36]

Limitations of the study

The findings of this study may not be fully generalisable to all HIV Positive women, as the research was conducted in specific urban public health institutions. The reliability of the data relies on participants' accurate recall and enthusiasm to disclose information. Recall bias can also affect results, as participants may not accurately remember past behaviours or exposures.

Policy implication and recommendations

Policymakers and stakeholders should prioritise the development and implementation of tailored strategies within the see and treat program to enhance outcomes specifically for HIV-positive women, taking into account their vulnerability to cervical cancer. Besides, researchers should plan to conduct periodic evaluative studies and policy briefs for the See and Treat program among HIV Positive Women. Additionally, ensure comprehensive access to all components of the see and treat program, with a particular focus on providing access to Loop Electrosurgical Excision Procedure, as it has demonstrated greater effectiveness in preventing recurrent cervical neoplasia among HIV-positive women.

Conclusion

The see-and-treat program for cervical intraepithelial neoplasia among HIV Positive women demonstrated an effectiveness rate of 73%. However, this also underscored that many cases did not achieve a cure. Consequently, there is a clear imperative for ongoing efforts to enhance outcomes for those individuals who did not experience a cure. This may entail a potential need to revise the see-and-treat intervention specifically tailored for HIV Positive women. During the data collection period in the study area, only five hospitals offered comprehensive see and treat interventions, particularly LEEP service. This situation contradicts the objective of the see-and-treat approach, which aims to provide immediate diagnosis and treatment without needing a referral. So, it is strongly recommended that all components of the see and treat program be made available, specifically providing access to the Loop Electrosurgical Excision Procedure.

Author's contributions

Dr Meaza Zeleke Wodajo and Professor Azwihangwisi Helen Mavhandu-Mudzusi contributed to the design and implementation of the research, the analysis of the results, and the manuscript writing. Dr Ayobami Precious Adekola analysed and interpreted the results and contributed to the manuscript writing. Dr Hulisani Matakanye contributed to analysing the results and the manuscript's writing. All authors reviewed, commented on, and approved the final version of the manuscript and are equally accountable for all aspects of the work.

Funding

Armauer Hansen Research Institute Addis Ababa, Ethiopia, funded this study.

Data availability

The data used for this study are available in secured web research electronic data capture. Interested bodies can get the datasets without compromising the ethical principles.

Competing interests

The authors declare no conflicts of interest

Acknowledgements

The authors sincerely thank all the research participants whose time and contributions were invaluable to this study. Your willingness to share your experiences made this research possible. We are also deeply grateful to the Armauer Hansen Research Institute for their funding support, which enabled the successful completion of this work. Special thanks go to the institutions where this research was conducted; your resources, guidance, and collaboration provided an essential foundation for this project. We appreciate everyone involved and hope this work contributes meaningfully to the field, reflecting your efforts and dedication.

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